

Remarks

Claims 132-134, 136-150, 158 and 159 are pending. Claims 132 and 133 have been amended and Claims 158 and 159 have been cancelled without prejudice or disclaimer. Support may be found throughout the original specification such as in paragraphs [0039], [0094] and [0077]-[0083].

Claims 132-134 and 136-150 are rejected under 35 USC §112, second paragraph, as being indefinite. Specifically, the rejection states that the term “alloy” in Claims 132-134 and 136-150 is indefinite because it is being used in the rejected claims to refer to the “islands” in an “island-in-sea” composition and deviates from the common definition of the term. The rejection states that the specification does not clearly redefine the term “alloy” as having this “uncommon definition.”

The Applicants respectfully submit that Claims 132 and 133 have been amended to incorporate the subject matter of Claims 158 and 159. As indicated by the fact that Claims 158 and 159 were not included in the rejection under §112, the Applicants respectfully submit that the language of the amended claims is definite and satisfies the requirements of §112. In light of the amendment, the Applicants respectfully submit that the rejection under 35 USC §112 is moot.

Claims 132-134, 136, 142-144, 158 and 159 are rejected under 35 USC §103(a) as unpatentable over Nishioi. The rejection states that Nishioi discloses a web of fibers consisting of conjugate (alloy) polymeric island-in-sea microfibers, according to the melt-blown process, followed by removal of the “sea-phase” of the fiber revealing a web of “island” fibers. The rejection concedes that Nishioi fails to disclose the percentage of nanofibers in the sum of Pa of single fiber ratios or the index of Pb, freeness of the nanofibermat and average pore area and density, and fiber smoothness. The rejection, however, states that these features are result-effective variables and it would have been obvious to one skilled in the art to optimize these variables to obtain the claimed subject matter.

The Applicants agree that Nishioi is silent with respect to the sum of Pa of single fiber ratios or the index of Pb, freeness of the nanofibermat and respectfully submit that the rejected claims are not obvious in view of Nishioi.

The Applicants respectfully submit that Claims 132 and 133 have been amended to recite “the adequate fiber length of the short nanofibers in the nanofiber synthetic paper is 0.1 to 20

mm.” The Applicants respectfully submit that Nishioi fails to teach or suggest each and every feature of the amended claims. As stated in the rejection, Nishioi teaches making a web of fibers according to the melt-blown process. The melt-blown process does not provide short nanofibers having a fiber length of 0.1 to 20 mm and, thus, Nishioi does not teach or suggest such short nanofibers. Accordingly, Nishioi fails to teach or suggest the subject matter of the claims.

Furthermore, Nishioi does not teach “nanofibers made of thermoplastic polymer by melt spinning” as recited in the rejected claims. Nishioi relates to a melt blown non-woven fabric of polymer blend. *See, e.g.*, col. 2, lines 46-52; col. 3; Example 3 of Nishioi. Accordingly, the Applicants respectfully submit that Nishioi is distinct from the subject matter of the claims, such as, “nanofibers made of thermoplastic polymer by melt spinning.”

Accordingly, even if one skilled in the art were hypothetically motivated to modify Nishioi by optimizing the variables stated in the rejection, the result would not be the subject matter of Claims 132-134, 136, and 142-144. Accordingly, the Applicants respectfully submit that Claims 132-134, 136, and 142-144 are not obvious in view of Nishioi. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 137-141 and 145-150 are rejected under 35 USC §103(a) as unpatentable over Nishioi, in view of Chung. The rejection states that Nishioi teaches the nanofiber synthetic paper recited in the rejected claims, but fails to disclose the thickness, pore size, permeability, and additional materials to be incorporated into the nanofiber mat. The rejection relies on Chung for these teachings.

As discussed above, Nishioi fails to teach a nanofiber synthetic paper wherein “the adequate fiber length of the short nanofibers in the nanofiber synthetic paper is 0.1 to 20 mm.” Chung fails to cure this deficiency. Instead, Chung teaches away from short nanofibers having a fiber length of 0.1 to 20 mm because Chung teaches a method of electrostatic spinning which provides for long nanofibers. Accordingly, the combination of Nishioi and Chung does not result in the subject matter of Claims 137-141 and 145-150.

Furthermore, Chung’s method of electrostatic spinning also fails to cure the deficiency of Nishioi with respect to “nanofibers made of thermoplastic polymer by melt spinning.” Chung’s method comprises one-component from spinning from a polymer solution. *See, e.g.*, page 1, [0004], page 11, Example 5. Thus, the combination of Chung and Nishioi does not result in “nanofibers made of thermoplastic polymer by melt spinning.”

Moreover, Chung fails to teach or suggest “60% or more in the sum Pa of single fiber ratios.” Chung teaches that the fine fibers comprise random distribution of fine fibers which can be bonded to form an interlocking net and the production of fiber of 0.23 and 0.45 micron in diameter. See, paragraphs [0006], [0078], and Example 1 of Chung. Therefore, the sum Pa of single fibers taught by Chung would be less than 60%.

Accordingly, even if one skilled in the art were to combine Chung and Nishioi, the result would be distinct from the subject matter recited in the rejected claims. Contrary to the rejection, hypothetical routine optimization of variables cannot cure the deficiencies. Not only is Chung silent with respect to the freeness of the disarranged fibers, but it also teaches methods that would lead one skilled in the art away from modifying Nishioi to obtain the claimed nanofiber synthetic paper. Thus, the Applicants respectfully submit that Claims 137-141 and 145-150 are not obvious in view of the combination of Nishioi and Chung. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 132-136, 138-140, 142, 145, 146, 150, 158 and 159 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over Claims 1-19 of copending Application No. 11/587,128. The Applicants respectfully request that treatment of this rejection be held in abeyance given the “provisional” nature of the rejection.

Claims 132-135, 139, 140, 142, 145-147, 149, 150, 158 and 159 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over Claims 1, 3, 4, 7-10, 12-16 and 35 of copending Application No. 11/578,926. The Applicants respectfully request that treatment of this rejection be held in abeyance given the “provisional” nature of the rejection.

Claims 132-135, 144, 145, 146 and 150 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over Claims 1-16 of US Patent 7,666,504. The Applicants respectfully request that treatment of this rejection be held in abeyance given the “provisional” nature of the rejection.

Claims 132-135, 139, 140, 142 and 143-150 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over Claims 1, 4, 7, 8, 10-12, 16-19, 53, 56, 57 and 59 of copending Application No. 10/532,082. The Applicants respectfully request that treatment of this rejection be held in abeyance given the “provisional” nature of the rejection.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



T. Daniel Christenbury
Reg. No. 31.750
Attorney for Applicants

TDC/vbm
(215) 656-3381